WOMEN INVADE 58 DEPARTMENTS IN RAILROADING

Prove Competence as Workers, From Locomotive Dispatchers to Watchwomen at Crossings

By Rebecca Drucker

THERE have been few industries that have guarded themselves more jealously from the encroachment of women than that of railroading. Even in those branches of work to which women have long been admitted in other industries the railroads have preferred using boys to women. The tradition was that a boy who entered the railroad even as office or switch-boy would aspire to become engineer or conductor or agent by intervening stages that were insurmountable by women, and that therefore women would not devote themselves to their work with the same application. On the part of the workmen there was the well sustained objection that the admission of women would mean the breaking down of wages. The experience of the past year, though slight as yet by comparison with that of England, has modified both these traditions. Women are entering railway work on the same wage schedule as men, and the railroads are finding to their surprise that the same desire to achieve exists with women as with men.

In England, by the munitions act, the government set up an elaborate bureau for the dilution with women labor of all industries directly connected with the war. None is more directly connected with it than transportation. Of a million women at war work in England 100,000 are at work on transportation. In this country the labor shortage is so much less acute that the diluting is proceeding much more cautiously. Yet I have before me a table of the employment of women by the Pennsylvania Railroad Company's system of lines east of Pittsburgh and Erie, showing that in the last year women have been put to work at fifty-eight occupations, as against possibly a dozen of the year before.

What They Have Done Up to Date

There were on March 1, 1918, for instance, 3,551 clerks and stenographers, as against 448 on May 1, 1917; 257 attendants in store rooms, tool rooms and parcel rooms, as against five of the year before; 192 messengers and assistants, as against 19; 92 signal women, as against 60. And of pioneers in jobs never before filled by women there are the following interesting statistics:

5 Locomotive dispatchers,
2 Distributers Pullman space,
20 Draughtswomen,
6 Draughting apprentices,
6 Hammer operators,
3 Gang leaders,
1 Coal inspector,
5 Mechanics' helpers,
4 Painters,
7 Power operators (electric plant),
34 Shop hands,
138 Telegraph operators (students),
4 Switch tenders,
8 Ticket sellers,
6 Tracers,
2 Turntable operators,
36 Trackwomen,
4 Warehousewomen,
82 Watchwomen at crossings.

The more obvious results are on what one railroad man has illuminatingly called the "housekeeping side of railroading." As cleaners of cars, dispensers of information, sellers of tickets, markers of bulletin boards and in the performing of the minor semi-important and important duties of the indoor departments the substitution has wrought no change in quality of labor performed or in the usual conditions of labor for women.

On the New York Central they found the women dispensers of information by 'phone quicker, more patient and often more reliable than the men they had heretofore used. And the thousands of questions that are hurled from invisible sources at these girls tax these qualities to the limit.

"When does such and such a train leave? What connections do I make at such and such a place? What is the fare? One way, excursion and round trip?"

Not only does the work require a high degree of alertness and patience, but a grasp of the whole intricate railroad map.

Railroad School Open to Women

The Pennsylvania has opened to women their Philadelphia school that has heretofore been conducted for young men desiring to learn railroad work. The course includes telegraphy, manual block signal operation and station office work. The Missouri, Kansas & Texas has opened four schools on a general plan similar to that of the Pennsylvania schools. So that as men leave these jobs for war service trained women will be ready to take their places.

But it is on the technical and mechanical side of railroad work that radical adjustments are taking place. It is a thin line of women, to be sure, that is invading the shops and yards, but it is bound to be on an increasing scale for the duration of the war at least. They are drawn from many fields, and they range from the unschooled to college graduates. They have come with a sort of exhilaration at their release from the confinement of mill and store and at working on equal terms with men. The histories of their previous occupations are varied. There was a splendidly tall girl in the Erie shops at Port Jervis, who had gone through the local high school and been a bookkeeper. After wasting her five feet nine on a bookkeeping job that paid $7 a week she responded joyfully to the poster of the Erie Railroad advertising openings for women. Her father and brothers were workers on the railroad and a feeling for it was innate in her. In overalls at a light drill press she earned twice as much as she had as a bookkeeper. She is now fitting herself to be an electrical power operative.

Gang of women section hands cleaning track on Pittsburgh division of the Pennsylvania.
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Like to Learn Something Real

The little Italian girl in the store room of the Jersey City repair shops had been in the silk mills in Paterson. She worked at a drill press until the shop burned down and then was temporarily shifted to the store room.

"Do you like it?" I asked. "You bet!" came back with unmistakable enthusiasm. "Why?" I persisted. "Well," she hesitated—then pointed around her to the lifting cranes outside and the cars being shunted back and forth and the men at the nearby forges—"I guess it's because you learn something here."

And the large Swedish girl—blonde and serious—who was learning electric welding at a helper's wage of twenty-eight cents an hour (as a master welder she will earn forty-two cents)—why did she do this in preference to housework or mill work? "I like man's work," she said. "I'm awful strong."

The young Englishwoman was taking the place of her husband, a young mechanic who had joined the army. She had never worked before. The thirty colored women doing laborer's work in the Pennsylvania yards at Trenton were accustomed to the work of stooping and lifting. They had done heavy housework. The girl who was tending the switch in the yard did it because she liked outdoor work.

One young teacher came to a Western shop to work at a lathing machine so that she could gain the experience to enable her to teach physics from a practical standpoint. The intelligence and high quality of her work attracted attention. There was room for a person of her ability and equipment and she was sent to Chicago to fill an important position, to return no more to teaching. The widow in the storeroom of the Port Jervis shops was paying off her dead husband's debts and taking care of three children, a cow and an acre patch of garden. In short, they come from all classes and for all reasons—just as do the men beside whom they work.

But the admission of women to the shops has required some alteration in the conditions of work. The Angus shops of the Canadian Pacific provides the model for all railroad shops in this country who are replacing men with women. These shops, normally employing about 1,200 men, made adequate provision for the admission of women, taking into consideration the fundamental temperamental and physical differences of the method a man and a woman may employ in doing the same piece of work. In cases where women were employed at machinery it was often necessary to readjust it to the woman's lower level. Seats were provided for work requiring a stooping posture. Measures of safety are taught them. With the admission of women to the industry has come the necessity for welfare work, and in this the Angus shops showed a high degree of enlightenment. Retiring rooms were built in a quiet corner of the shops and a matron was installed to look after the comfort of the women and to supervise, in an unobtrusive way, the personnel. Rest periods are allowed each woman. There is a woman's dining-room, where soup and bread are furnished at cost, and facilities are given them for making hot tea and coffee. There is a library and first-aid room.

Some idea of the varied classes of work which women are doing in these shops may be gained from the following survey published in "The Railway Age Gazette":

"On the main floor of the machine and erecting shops they were found handling out tools from the central tool room. Several of them operate milling machines and brass lathes and do other light work in the manufacturing tool room. Several women are also employed in the electrical repair shop making repairs to armatures, field coils, etc.

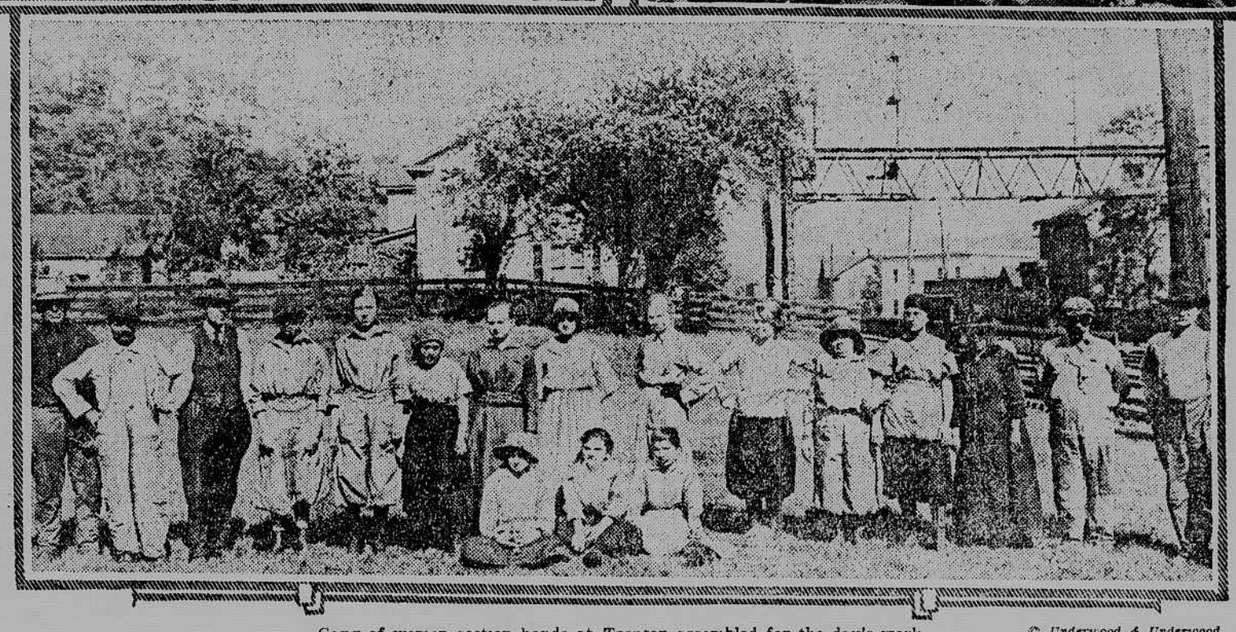
"Between 40 and 50 per cent of the inside employes in the storekeeping department are women. They were found doing such work as sorting small castings on trucks, in the unloading of materials from cars, packing material for shipment, checking shipments and doing clerical work, sweeping and trucking of material.

"In the locomotive repair department at least 200 are engaged in the various tasks of repairing passenger equipment and building new freight cars. It is the practice on the Canadian Pacific to do practically all of the passenger car overhauling during the winter months, when the demand for passenger cars is lightest. During the summer months a large part of the force in the passenger car department is transferred to the freight car shops and is used in the building of new equipment.

"In the passenger car department women are used for cleaning passenger cars as they come into the shops for repairs, baking enamel on the car trimmings, working on the inside trim, cleaning and varnishing cane seats, painting and varnishing sash, blinds, racks, etc., making mattresses and sleeping car curtains. Two women are also employed in cleaning and repairing triple valves.

"In the steel shop, where the steel underframes are assembled for freight and passenger cars, women are used for operating drill presses. One young lady was noticed operating a three-spindle bolt threader.

"Women are used in the truck shop for operating drill presses, cleaning and sweeping. One woman was engaged in operating three-power hack-saws. Forty-one women were found at work on the scrap docks and in the reclamation plants. These women were more muscular than those doing the indoor work and handled the heavy parts and pushed wheelbarrows with the same energy as do men ordinarily engaged in this class of work."



Gang of women section hands at Trenton assembled for the day's work. © Underwood & Underwood.

Women shop laborers in the Trenton yards, many of whom are negroes.

Have Long Been in 'Housekeeping Side'—Now Are Section Hands and Power Operators

The Output in Relation to Man's

The Pennsylvania Railroad has gone the furthest and professes itself satisfied with the results. The unskilled labor of men may in many cases be replaced by the unskilled labor of women without any distinctive change. A woman time checker accomplishes as much work as a man. So does a woman gate keeper or switch tender. In the reclaiming of scrap J. P. Murphy, general storekeeper in Cleveland of the New York Central, found that women were superior to male laborers in sorting and laying aside articles that might be worked over. In the handling of light freight, in the cleaning of roads and maintaining of cars they were found to equal the average of the men they had replaced. On the side of skilled work it was found that a high degree of efficiency may be developed by a woman in light machine work—rather remarkable considering how unacquainted the average woman (and these are largely average women) is with things mechanical. The quantity of work turned out by women is not equal to that of men, but nearly everywhere women have been anxious to go on piece work where a premium is placed on the speeding up of output. In accuracy, in caution in matters of safety, in sticking to the job, women are perhaps the superior of men. Fewer accidents occur to women than to men on the same job and there are no women "floaters."

In the final analysis the question of women's work on the railroads, as in other unusual conditions of work which the war has opened to them, the question is not so much "How can they be used?" as "Where should they be used?" There is apt to be something misleading about the ease with which women can be substituted for men. The great necessity is for a survey of the industry that will investigate and make sure of the places where women can properly and efficiently be substituted for men, and then the building up of the most favorable conditions under which they best do that work.

The question of fatigue and the amount of nervous strain under which the work would have to be done would have to be decided by experts. Such a survey might also show many places where women could be used if a readjustment of working conditions were made. And if the greater need arose calling for women in work which is now admitted'y beyond their strength these experts might judge how a job could be broken up so that it might come within the strength of women. Failure in the use of women has been largely due to placing them where their health would not be conserved and where it was hard for them to maintain standards of morality. In admitting women to railway work there is great danger for both the railroads and the woman on the job if all the bars safeguarding her physically and morally are let down. And this safeguarding of the woman on the job will benefit the man on the job, too, when he returns to find that the work he does is brought to a higher standard of efficiency and safety. Even in these early stages results have shown themselves here and there.

Hold Respect of Their Fellow Workers

Take the small matter of the work done in a stooping posture. Nearly every shopworker knows of the time wasted in straightening up a back bent from work done in a stooping posture. In one Erie shop seats were unknown until women were admitted to some light machine work, and the law required that seats be furnished them. The old superintendent was amazed to find the increase and improvement in the work accomplished. He furnished seats to the men and found the same increased efficiency. He has become a convert to this idea, and now preaches it to other superintendents of workshops. In his time it had been a matter of pride that a man should do his work standing up, no matter what position it required.

The law decrees equal pay for women replacing men and the same ten-hour day. In some states it requires two rest periods each day and seats at machine work. Yet the whole work of readjustment is scarcely touched and cannot be until women enter the work in larger numbers. If the war should continue for a long time there is no doubt that this will happen and that the industry will see many changes. There is properly a reluctance to put women to work on the heavier work of railroading. In the interests of conservation, we will not put the work of the machinist, the boilermaker, the blacksmith, brakeman, fireman, engineer (all vital to railroad work) on the list of women's occupations except as a war measure. And the matter of overtime stands in the way of woman's entrance to much of this heavy work. The law in many states does not permit women to work more than fifty-four hours a week. In these days of the straining of railroads to their breaking point it is not unusual for a man to put in eighty hours a week (at time and a half for overtime).

In all the shops I visited it was plain that women held the respect of their men fellow workers. The fact that women work at the same rate of pay as do men is largely the reason for this. This good feeling would not have existed had women underwaged men. The friendly and generous assistance of workmen has often enabled women to go to work without preliminary training. Only by the coöperation of skilled workmen who have willingly trained women in the shops at their work has the British government been able to attain the present enormous output of munitions.

U. S. BOYS IN FAMOUS FRENCH ARTILLERY SCHOOL

Volunteers Selected for Stiff Course to Fill War Depleted Staff

By Lawrence Moore

TWO Spaniards, a Swiss, a Serbian and a Montenegrin—these were our companions as E. and I were marched through the streets of Paris from the Foreign Legion recruiting office to the Invalides, to be sworn into the Legion Etrangère of France "pour la durée de la guerre"—for the period of the hostilities. We stood at the opening of our great adventure; we were about to join that famous fighting organization, made up of all the outcasts and adventurers of the world, but which has alone received the highest decorations that the French government bestows for valor.

However, E. and I soon found ourselves separated from our pirate-looking companions. For in view of the fact that we were Americans and volunteers, and possessed of some humble knowledge of mathematics, Monsieur le Ministre de la Guerre consented to transfer us from the First Regiment Etrangère to the 32eme d'Artillerie, and to order us to the training school for officers at Fontainebleau. This would probably be a less romantic course for us than to follow our international friends into the Foreign Legion infantry, but we decided that it would offer the most of opportunities. Just exactly what there was in store for us we did not know, and neither of us had the faintest notions of what a gun really looked like.

But we were only too happy to accept in the true spirit of adventurers the chance to become in time officers in the French artillery.

We Drew Outfits Of Horizon Blue

And so the next day we went down to Fontainebleau, and reported at the depot of our regiment. The first necessity to transform one into a soldier is of course a uniform, so we at once drew out outfits of horizon blue. Now, French soldiers' uniforms come in three sizes—tall, short and medium—so it is not hard to imagine the excellent fit we got there. We could hardly keep a straight face as we viewed each other in these uncouth costumes, with little caps of Civil War type. And in addition they gave us each a large sized sabre and a dangerous looking revolver, this last being carried in a holster exactly in the middle of the back, where it could never be reached in case of need. Probably this is only a safety precaution.

In this regalia we went across the town to the school, to join the little group of Americans already there. And it did seem good to find some fellow countrymen to receive us, even though they were disguised, like ourselves, as Frenchmen. Our curiosity about the school was naturally aroused, and we soon discovered a few interesting facts about its history. It appears that Napoleon founded it to provide officers for his artillery. So he built the buildings for it near his chateau, and made them fit into the general scheme of his gardens and park. And so the school came to be established on the outskirts of the town, and throughout the last century it grew to be a great centre of artillery study and experiment.

A sort of graduate school of artillery, to it came the young officers to perfect themselves in their profession, and here came also the older officers to experiment with new guns and appliances. And here they worked in the quiet seclusion of this little town, surrounded entirely by the great forest and lost in a peacefulness quite contrary to the warlike aims of their work.

And then came the war, and immediately the students went out to carry on their experiments on the real field of war. But soon the French army began to find itself in great need of artillery officers. Casualties were heavy, and the usefulness of the artillery, and consequently its numbers, increased. And so the old school became at once a great training school for privates and non-commissioned officers sent back from the front for three or four months' instruction before becoming officers. And then the place took on a new aspect, as thousands of men came to be rushed through two or three years' work in as many months.

The place has gradually overflowed into a nearby barracks, and other enlargements have been made, until now the school produces upward of ten thousand artillery officers a year. The lectures are given in the old school buildings, and the students eat and sleep in the barracks near.

Day's Work Lasts From Six to Six

We soon discovered that there is quite a bit to learn about artillery, and the result is that we have about ten or eleven hours of hard work a day. Half our time, about, is spent in lectures and recitations, and the rest is spent in practical drill and exercises in the field. Our lectures include such subjects as ballistics, fortifications, artillery materials, munitions, wireless telegraphy, telephones and automobiles, in addition to classes in the principles of the preparation and conduct of fire, and in topography. We have many drills with guns of all models, and also mounted drills out on the parade ground. And twice a week or so we go out to the range to regulate fire on imaginary trenches and houses on a hillside. And so our work goes on—up at 6 in the morning and work until 6 at night. In four years of war the French have systematized wonderfully their artillery instruction. Nothing necessary is left out, and nothing unnecessary is included. Twenty students are grouped together into what is called a "brigade." Each brigade has its own instructor, who teaches them the fundamental subjects and gives them drills. In all cases the instructors are lieutenants who have served at the front and who know their business thoroughly, and from personal experience. Ours has commanded a battery for over two years. We Americans form a separate brigade, and ours is the first brigade to be composed entirely of foreigners.

We sleep in a large room big enough for the entire brigade. Our beds are not of the latest model for comfort, being composed of wooden slats and a stiff straw mattress. But good fellowship among us makes up for lack of comfort, and our room resounds every night with such sounds of merriment that our French comrades open their eyes with wonder. The average American can pretend outwardly to be cheerful at any time, and usually does, and his cheerfulness is accompanied with noise. In this point we differ from our Allies, who are much more solemn and quiet. And we eat our potatoes and horse meat with the rest, but one has to be mighty hungry to enjoy these staple articles which compose our menu. However, the little restaurants in town come to our relief, for we are allowed to leave the grounds between 6 and 9 every evening. On top of it all, we draw the regular pay of a French private, which is five cents a day.

A few weeks ago we had a demonstration of gas shells and of gas waves. The gas from the shells killed a number of dogs that happened to be on the spot. And as we passed by a short time after we found it necessary to put up our masks. Another time an aeroplane came over to give us a demonstration in regulating fire from the air. And at several times we have had other practical demonstrations in the various problems of artillery. A typical day's schedule is something like the following:

At 6 we get up and hastily swallow a small cup of black coffee and munch a piece of black war bread, which is all we get for breakfast. A quick wash under the faucet follows, and we hurry to arrange our beds for assembly, or "rassemblement" as it is called.

The day's work begins with a recitation in the principles of fire at 7 At 8:30 we have a lecture on some subject such as ballistics or munitions. At 10 we have an hour's drill with the 75s, and then we rush up to the mess hall for our lunch of potatoes and horse meat. Soon after lunch we are whisked off to the range in a truck to practise in regulating fire. This lasts until 4, and then we go to the riding hall for equitation. And after supper we are just about ready to turn in.

Proud of Serving France and the Allies

But now we are getting along in our course, and we feel quite like veterans. Just lately the school has taken on quite a cosmopolitan air, with the admission of many more Americans recently arrived and of a number of members of the Polish Legion and of several Russian and Brazilian officers. But as our days as beginners are now far back of us, we have a healthy disrespect for the newcomers.

And in a few short weeks we will have finished, and we will find ourselves full-fledged "aspirants," with a bit of gold braid on our sleeves. Then we will go out to the front for a few months of practical experience before finally getting our commissions.

At any rate, we are proud to be serving France and the Allies, and indirectly our own country, in whose ranks we would be serving but for the fact that we have most of us been rejected from the American army for physical reasons.

FIRST "BRIGADE" OF AMERICANS TO ATTEND FAMOUS FRENCH ARTILLERY SCHOOL

Top row (left to right)—Charles Bayly, jr., Princeton, '18, Denver; P. A. Rogers, Columbia, '19, Binghamton, N. Y.; F. T. Henderson, Columbia, '17, New York City; E. L. Egger, Beloit, '18, Elgin, Ill Middle row—Robert Smyth, California, '17, Berkeley, Cal.; A. L. Partridge, Cornell, '17, St. Louis; G. L. Sommer, Columbia, '20, Newark, N. J.; Richard Eldridge, Princeton, '18, Houston, Texas; Benjamin Carpenter, jr., Harvard, '16, Chicago; J. D. Hutchinson, Howard, '19, Boston; R. W. Wood, Harvard, '16, Baltimore; W. C. Towle, Notre Dame, '18, New York City; T. F. McAllister, Michigan, '18, Grand Rapids, Mich.; W. W. Cortelyou, Cornell, '16, New York City; Lawrence Moore, Williams, '19, Fennycroft, West Falmouth, Mass; T. P. Lane, California, '16, San Francisco; F. H. Herrington, Washington and Jefferson, '15, Latrobe, Penn. Bottom row—E. J. Phelps, jr., Yale, '14, Minneapolis; W. M. Barber, Oberlin, '19, Toledo; G. W. Patterson, jr., Yale, '14, Ann Arbor, Mich.; E. H. Ludbury, Amherst, '09, Mount Vernon, N. Y.; Stanton Garfield, Williams, '17, Williamstown, Mass.; J. F. Howe, Harvard, '18, Belmont, Mass.

Work Lasts From 6 to 6, With Intervals for Horse Meat and Potatoes